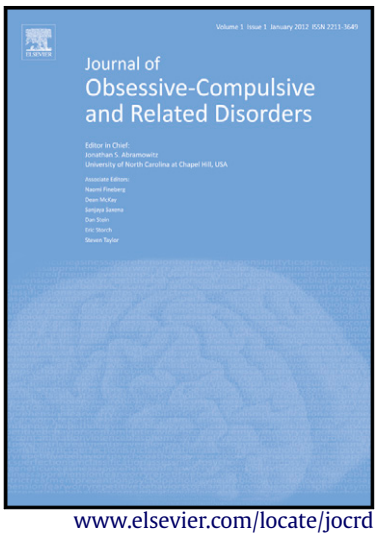

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Body Dysmorphic Disorder: the functional and evolutionary context in phenomenology and a compassionate mind

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Abstract

The descriptive phenomenology of Body Dysmorphic Disorder (BDD) is well known in terms of the content of the beliefs, the attentional biases and the nature of the repetitive behaviors. Less has been written about the function of BDD symptoms in relationship to a perceived threat of a distorted body image and past aversive experiences. This article therefore explores the functional and evolutionary contexts of the phenomenology of BDD as part of threat based safety strategies. The attentional bias and checking are discussed in terms of threat detection and monitoring. Behaviors such as comparing self with others and camouflaging appearances have the function of monitoring and avoiding social threats such as social contempt, shame, rejection and ridicule from others. These fears may be rooted in early aversive emotional memoires. People with BDD may find it difficult to engage in therapy if they do not have a good understanding of the context and function of their behaviors and if the memories of past aversive experiences (e.g., of rejections and shame) have not been emotionally processed. In addressing these social threats we discuss how the mammalian attachment and affiliation based emotions need to be

recruited as part of the therapeutic process. These affiliative processing systems underpin a compassionate orientation to working with people with BDD and their capacity for engaging in the change process.

Keywords: body dysmorphic disorder; functional analysis; compassionate mind; attachment;

Introduction

Much is now known about the descriptive phenomenology of Body Dysmorphic Disorder (BDD). The preoccupation and distress in BDD are most commonly around the face (especially the nose, facial skin, hair, eyes, eyelids, mouth, lips, jaw, and chin) (Neziroglu & Yaryura-Tobias, 1993; Phillips, McElroy, Keck, Pope, & Hudson, 1993; Veale, Boocock, et al., 1996). However, any part of the body may be involved and the preoccupation is frequently focused on several body parts. Sometimes the complaints are non-specific as in feeling ugly or "not right".

BDD is now grouped in DSM-5 in the section for Obsessive-Compulsive and related disorders, partly on the similarity in the phenomenology of obsessions and compulsions to BDD, and the comorbidity and family history of Obsessive-Compulsive Disorder (OCD). However, Storch, Abramowitz, & Goodman (2008) highlight how the phenomenology of OCD does not fit neatly into the two categories of obsessions and compulsions. Factor analysis of the Yale Brown Obsessive-Compulsive Scale (YBOCS) in OCD reveals just one factor score, in which the resistance and control items do not meaningfully contribute to the total severity (Deacon & Abramowitz, 2005). Storch et al. (2008) further argue that repetitive and compulsive behavior, per se, is not the defining feature of OCD. Rather, repetition is simply one of the several means by which people with OCD respond to a threat and

that the term "compulsivity" has become a way of describing a whole range of behaviors. We shall consider how this observation is just as relevant for BDD in which behaviors are also conceptualised as "compulsions" in the BDD-YBOCS (Phillips et al., 1997).

DSM-5 has added "repetitive behaviors" as a characteristic feature of BDD at some point during the disorder. The emphasis in DSM-5 is on the form rather than a functional understanding of the phenomenology. The term "behavior" in BDD is, however, interpreted broadly in DSM-5 in terms of how a person responds to a perceived defect(s). It includes cognitive processes such as comparing and scrutinising others (which could also be conceptualised as part of the preoccupation in BDD). In the same manner, ruminating about a perceived defect could be part of the preoccupation and part of the response. Thus like OCD the phenomenology of BDD is unlikely to fit into two distinct categories of obsessions and repetitive behaviors.

Overt "repetitive behaviors" in BDD include: checking in mirrors or reflective surfaces (or checking directly without a mirror); taking photos of oneself; touching the body part or contour of one's skin; seeking reassurance or questioning others about their appearance; changing and re-arranging clothes; excessive exercise or weight-lifting; excessive make-up, tanning or grooming; seeking of cosmetic and dermatological procedures; altering position of the body or using clothing such as hats to camouflage; or skin-picking (Lambrou, Veale, & Wilson, 2012; Perugi et al., 1997; Phillips et al., 2006; Phillips & Diaz, 1997). An integral feature of BDD is avoidance of social or public situations or intimacy, or avoidance of specific cues that trigger appearance-related anxiety (for example photos or video taken by someone else, looking in certain mirrors or being in certain lighting). Some of the behaviors described above, such as repeated seeking of reassurance, may be more "compulsive-

like" in that they are largely involuntary: a person feels driven to perform them, they are repetitive (one act immediately after another) and are seldom resisted. In addition an individual with BDD may have a criterion to terminate a compulsion such as mirror gazing by wanting to feel "comfortable" or "just right" (Baldock, Anson & Veale, 2012). Other behaviors such as obtaining a cosmetic procedure or altering body position to camouflage a feature are difficult to conceptualise as compulsions.

Functional relationships in BDD

This article goes beyond the descriptive phenomenology of BDD (that focuses on the content of the beliefs about being ugly and descriptions of the behavior as compulsions in response to an obsession) and focuses on a *functional* and *contextual* understanding of BDD. Partly because individuals with BDD are very sensitive to shame, it is important to be cautious about language that implies some kind of deficit/error within the self, and therefore to avoid the language of thinking errors/distortions, dysfunctional/maladaptive beliefs, or brain defects. Instead we will use language (e.g., "better safe than sorry") that recognizes threat and negativity biases as normal to human processing systems (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Moreover, threat focused styles of attending and thinking can be very functional and understandable, and can track evolutionarily important concerns (Tobena, Marks, & Dar, 1999). We agree too that like OCD, not all behavior in BDD has to be conceptualised as a compulsion just because it is repetitive (Storch et al, 2008).

We want first to focus on the principle that the ways of responding in BDD are highly understandable given the way that humans like many other animals have evolved to respond to threat rapidly in order to protect themselves and that this rapidity often works on a 'better safe than sorry' principle (Gilbert, 1998a; Marks,

1987). Thus we will argue that it is important at an assessment not just to make a diagnosis of BDD and go through a detailed checklist of behaviors, but also (a) to make a developmental formulation as a means of engagement and begin to understand how past experiences shape a person's view of their own appearance as a threat, and (b) to provide a functional and evolutionary context by normalising how the ways of responding are very understandable in terms of trying to keep the person safe.

Rapid, physiological threat response (the flush of anxiety) helps to deal with actual threat but is unhelpful in the absence of any concrete external threat. Moreover, threat sensitivity is easily developed from previous learning and conditioning. Emotionally conditioned memories of threat can fuel rumination and in BDD is focused on shame (Kim, Thibodeau, & Jorgensen, 2011) and in particular body shame (Veale, 2002). Ways of responding in BDD echo those of other anxiety disorders: when under threat it makes sense to think in black and white terms or give selective attention to a threat - this is how the threat system is setup (LeDoux, 1998). The response is similar to that in other body image disorders where there is marked shame and self-criticism.

Central to our argument is the importance of understanding both threat processing itself (LeDoux, 1998) and the regulators of threat processing, particularly the way mammalian social behavior has come to regulate threat; for example, the presence of a parent can calm a distressed child or encourage a youngster to engage with things that scare him or her (Mikulincer & Shaver, 2007). Feeling supported by others can stimulate courage (Gilbert, 2009). Recent research into the functional analysis of emotions and emotional regulation suggest that distinct emotion regulation systems underlie feelings of threat and safeness (Depue & Morrone-Strupinsky, 2005; Gilbert, 2009). Three types of emotion regulation system have evolved, each with a

different function and triggered in different contexts. These three systems interact and are depicted in Figure 1 below.

----------FIGURE 1 ABOUT HERE ----------

(1) Threat and self-protection-focused system. This system is focused on the detection of threat, attention processing, and response to threats. Threat-based emotions include anxiety, disgust, shame, anger and hatred and are associated with a range of behaviors such as fight, flight, freeze and the motivation for specific safety-seeking behaviors that aim to prevent harm coming to an individual (for example, escaping from a predator, averting the gaze from a dominant-other as social threat). The threat system enables individuals to detect and monitor a possible threat with increased sensitivity ("hyper-vigilance"); narrowing of one's attention ("selective attention"); rapid decision-making when a potential threat is detected ("black and white thinking") or using emotion to act fast ("emotional reasoning"). Therefore individuals may respond to threats not (only) because of dysfunctional beliefs or "thinking errors" but from the use of evolved mechanisms and heuristics (Baumeister et al., 2001; Gilbert 1998a)

The threat system typically evolved for rapid response using the "better safe than sorry" heuristics. Slow responders would be at risk of dangerous delay in defensive manoeuvres. For example, an animal grazing calmly may be easily alarmed by audible, visual or somatic cues indicative of a predator nearby, and will take flight. Subordinate animals are highly vigilant to potential threats from dominants (Gilbert & Bailey, 2000). Threat-response can often be made on the basis of a 'false alarm' – the animal runs away, but in reality no threat was imminent. If you watch birds feeding

on a lawn, you will see how rapidly they give up food in favour of escape. But false alarms are not a serious problem: missing a positive just means delayed gratification, but missing a threat or danger could spell serious injury or fatality. So threat systems are designed to allow many 'false alarms' such that rapid access to emotion and 'anticipate the worst' thinking rather than logical reasoning are common in humans. Such sensitivity, however, is problematic for humans who often ruminate or criticise themselves and amplify what are essentially false alarms when they have emotional memories of a threat. In addition, threat activation tends to suppress positive emotion; it is important to lose interest in feeding or any other positive activity when confronted by threat.

The main defensive behaviors to threat involve fight, flight/escape, avoidance, freezing and in social contexts, submissive behavior. Threats can include physical harm but more often nowadays involves social threats such as potential rejection, humiliation or social isolation (Barkow, 1989). Safety-seeking and repetitive behaviors are observed across all anxiety disorders and take many different forms (and not just obsessive compulsive and related disorders). Even when threats are no longer in the sensory field, animals and humans can still 'scan and check' for them – which in humans involves 'monitoring'. For example, monitoring and checking heart rate for someone with panic disorder has the function of monitoring physical threat; being hyper-vigilant for cues and checking for danger in Post-Traumatic Stress Disorder (PTSD) are designed to monitor whether something traumatic is about to happen again as the cues for threat have lost their context. The threat-system therefore involves an attentional system that locks onto and monitors a potential threat by a narrowing of attention (Baumesiter, et al., 2001). In BDD this is self-focused attention.

Behaviors such as checking in OCD have the function to detect a potential threat ("Is it safe to proceed?") or to monitor a possible threat that has already been detected ("Is the threat as severe as I think it could be?"). Szechtman and Woody (2004) refer to this as the "security motivational system" and propose that the termination of the behavior is induced by an internally generated "feeling of knowing" and that this would normally signal task completion. However in OCD, they suggest that problem is repetition of security-related behavior in an attempt to overcome a dysfunctional feedback mechanism and to eventually dampen the driving motivation. Boyer and Liénard (2006) developed the idea further in a model of a Precaution System geared to the detection of and reaction to inferred threats to fitness. This system does not supply negative feedback to the appraisal of potential threats, resulting in doubts about the proper performance of precautions, and repetition of action. Normally automatized actions are submitted to cognitive control. This "swamps" working memory, an effect of which is temporary relief from intrusions coupled with their long-term reinforcement.

Within the threat system, once a significant threat is detected, it then activates the Fear Module or system that motivates the individual to escape from the situation with "flight", submission or "fight". In OCD, there are magical ways for the person to avoid threat by "undoing" it (for example by compulsive washing, "wiping it clean" or some types of mental neutralizing). We will describe below how the threat system for fear is activated in BDD and the typical responses.

Note that the threat system also includes the emotions of anger and disgust. An increased sensitivity to disgust has been identified in BDD (Neziroglu, Hickey, & McKay, 2010) and self-disgust is part of the subjective experience of shame (Lewis, 1971). Hatred or loathing may be focused on the self especially in more severe cases

of BDD. Self-hatred is conceptualised as a combination of disgust and anger directed against the self. It motivates a desire to get rid of or to destroy and may be a factor in a desire for skin-picking, cosmetic procedures and suicide. Alternatively, the hatred may be directed against others (for example, towards a cosmetic surgeon whose handiwork has not changed the body part in a way that achieves the desired effect or has 'made the feature worse').

A factor that may be crucial to the acquisition of threat sensitivity and threat response is an innate disposition often needs to be coupled with a social process and this may be important for BDD. For example wild monkeys seem to have an innate fear of snakes, presumably in part because over millions of years snakes have been powerful predators of monkeys. Hence, those who developed mechanisms for snake fear and avoidance passed on more genes than those who did not look out for them whilst wandering about in their environment. But social referencing is key to triggering this fear. In a now classic series of studies, Cook & Mineka (1989) found that laboratory monkeys (who have never seen a snake) seemed to lack this fear. However, if they observed other monkeys showing a terror response to snakes, the naïve monkeys quickly developed a fear of snakes including toy snakes. Watching other monkeys show fear responses to flowers did not in contrast create a fear of flowers. Even though the naïve monkeys had not themselves experienced anything bad happening from a snake they had learned, by social referencing (attending to what others are doing and feeling) to be frightened. For monkeys this is completely automatic and does not come from careful cognitive processes or reflection (see also McNally 1987 for a review).

Shortly we will argue that BDD may be linked to a potential specialist mechanism for the detection of aesthetic cues that could lead to feelings of disgust

and rejection in others. However, it is possible that these threat detection systems require social learning to trigger them fully. As for the example of snake acquired phobias, we suggest that in BDD individuals may draw on both direct personal experiences of threat to body appearance and functioning in the form of shame over appearance (Buhlmann, Cook, Fama, & Wilhelm, 2007) and/or the observation of others feeling such body-focused shame or humiliation with consequent fear and safety strategies. Indeed, the latter observational process may be sufficient to sensitize the mechanism in some people. On this more research is needed.

(2) Drive, seeking and acquisition-focused system. This system enables the individual to pay attention to advantageous resources. An experience of pleasure is associated with pursuing and securing resource. The drive system leads to positive emotion only in the case of achievement, so the person's sense of well-being is contingent on frequent achievements. The issue here is that the drive system interacts with the threat system. The drive system influences and regulates the threat system and vice versa. Thus if the drive system *alone* is used to regulate threat-based emotions (for example by distraction with constant stimulation and keeping "busy" or a constant drive to seek a cosmetic procedure) then the person remains vulnerable and will eventually re-experience the sense of threat. The drive system can also be abused with stimulants such as cocaine or behavioral addictions such as gambling.

These are important insights into understanding how the drive system provides another way of responding to threat. Therapists should beware that an individual with BDD may use their drive system in the short term to keep themselves "busy" or to distract themselves and superficially appear to be making progress. Others reinforcing behaviours in that emanate from the drive system include actual appearance changes

such as building muscle mass or having a cosmetic procedure such as breast augmentation that may be associated with increased attention.

Activation of the threat system (by whatever means) will tend to suppress positive emotion. Over time, the threat system may be constantly activated and overwhelm the drive system -or drives become primarily in the service of safety strategies and threat avoidance. This will lead to deficits in the drive system and over time to co-morbid depression, which is extremely common in BDD. The main psychological therapy that targets the drive system is behavioral activation. The client focuses on what he is avoiding and on his values in life. In addition drives need to be focused on genuine positive behavior and rewards/pleasures not the avoidance of threats. So this requires a good functional analysis of the activity and not just keeping "busy" or avoiding potential conflict or situations associated with possible rejection (Dimidjian et al., 2006).

(3) Contentment, soothing and affiliative-focused system. This system is associated with a distinct positive affect to that associated with the drive system. It is experienced as peacefulness or well-being, and occurs when individuals are no longer threat-focused or seeking resources and are satisfied. The soothing system and the drive system play distinct roles on threat-regulation. Conversely, threat-regulation through activation of the soothing system can be longer-term and is not contingent on achievement. One of the major ways mammals and especially humans create a sense of safeness is through social relationships that activate the parasympathetic system (Porges, 2007) and can release oxytocin that impacts on the threat system (Heinrichs, Baumgartner, Kirschbaum & Ehlert, 2003; Kirsch, Esslinger, Chen et al., 2005). There is growing evidence that feeling socially safe with others in general is a better predictor of vulnerability than 'excitement-based' positive emotion (Gilbert et al.,

2008) and a better predictor than general positive or negative affect and social support (Kelly, Zuroff, Leybman, & Gilbert, 2012).

Only limited research has been done on the insecure attachment that might occur in BDD (Coles et al., 2006) or OCD (Doron, Moulding, Kyrios, Nedeljkovic, & Mikulincer, 2009). There is a significant body of evidence that an anxious or avoidant attachment system is an important factor in developing rigid or defensive methods of emotion avoidance or regulation, or in more extreme cases of emotional disorganization. Furthermore, interventions designed to increase a secure attachment have beneficial effects on mental health, prosocial behavior, and intergroup relations (Mikulincer & Shaver, 2007).

Secure attachments from childhood are therefore powerful in developing an affiliative orientation to self and others effective at regulating the threat system. There is evidence now that genetic expressions are influenced - for both good and ill - by our early affectionate relationships (Belsky & Pluess, 2009). The soothing system is linked to affiliative interactions, social connectedness, and safeness as conferred by the presence and social support of others. These of course are the exact emotions that many people with BDD are not able to access or feel. Although there is much overlap between different types of positive emotion, Depue & Morrone-Strupinsky, (2005) reviewed a wealth of studies indicating that social emotions and behaviors linked to competiveness and achievements are rooted in sympathetic and dopaminergic systems, whereas calming-affiliative positive affects are linked to the endorphins (Dunbar, 2010), oxytocin (Carter, 1998; MacDonald & MacDonald, 2010), serotonergic systems (Insel & Winslow, 1998) and parasympathetic activity (Porges, 1995). We shall discuss below how the contentment, soothing and affiliative-focused

system can be enhanced to assist in the regulation of threat by the use of compassionate mind approaches.

The Threat System in BDD

There is now general agreement that many fears track evolutionarily important themes, such as animal, spider and snake phobias are to do with potential injury or social anxiety is linked to fear of others (McNally 1987). Many animals have developed specialized attentional mechanisms to track (the threat of encountering) disease and deformity in others and so avoid them (Oaten, Stevenson, & Case, 2009). Not surprisingly then, appearance and aesthetics are salient domains of human monitoring and judgment; attractive people tend to fare better than unattractive ones (Etcoff, 1999). Moreover, physical appearance is one of the most common dimensions for shame (Gilbert & Miles, 2002). This threat sensitive attention process, which is a kind of monitor for aesthetic sensitivity is likely to be involved in BDD is some way (Deckersbach, Otto, Savage, Baer, & Jenike, 2000; Feusner et al., 2010; Feusner, Townsend, Bystritsky, & Bookheimer, 2007; Veale, Gournay et al 1996). People with BDD have frequently been shaped by social experiences that are often characterised by being shamed, rejected or humiliated (for example poor attachment; emotional neglect and sexual abuse, being criticised by a caregiver; being bullied or teased by peers)(Buhlmann, Cook, Fama, & Wilhelm, 2007; Neziroglu, Khemlani-Patel, & Yaryura-Tobias, 2006). We also know that people can acquire fears by observing the behaviors of others and certainly physical appearance is something that in Western society has a high focus of attention (Ectoff, 1999). In addition, appearance may have been one of the most salient factors that was positively reinforced or regarded as important and was a focus of attention in childhood (Neziroglu, Khemlani-Patel, & Veale, 2008). These experiences may over-sensitize people's ability to monitor their

physical appearance and function to reinforce the value of appearance over competence (e.g., comments such as 'You were wonderful on stage and you looked so good,'' rather than, "You played the flute so well during the school concert"). Others may be reinforced as children or adolescents for a particular body part, or for height, poise, or body shape, elements of which may for example have had a role in early dating success.

Rachman (1980, 2001) first described the failure to emotionally process events as an explanatory concept with relevance to anxiety disorders. He defined emotional processing as: "*a process whereby emotional disturbances are absorbed, and decline to the extent that other experiences and behavior can proceed without disruption*". Rachman argued that if emotional experiences were incompletely processed then certain signs of this failure would be manifested such as the return of fear and obsessions. Furthermore, he suggested that excessive inhibition or prolonged experiential avoidance of such events would lead to the maintenance of fear. People with BDD commonly experience a distorted image or "felt impression" of their appearance usually in the visual modality from an observer perspective but also from physical sensations (Osman, Cooper, Hackmann, & Veale, 2004). These are commonly associated with emotional memories that are associated with a current sense of threat as they have lost their context and have not been emotionally processed. Osman et al (2004) found that people with BDD were more likely than controls to experience intrusive appearance related images that were rated as significantly more negative, vivid and distressing. The images were associated with early aversive memories (for example being teased or bullied, or being self-conscious about changes during adolescence.). Imagery and sensory impressions may be experienced with a time perspective or context rather than being memories from the

past (similar to a model of trauma). When the memories are emotionally processed and cognitively appraised as related to a past experience, it will be easier to test the theory that a body image problem is present by the use of behavioral experiments - for example to test the effect of altering the attentional system so that a client can focus on the environment as a whole (and not on the self as in self-focused attention nor comparing against others). Thus as part of the engagement of a person with BDD in therapy, one might emphasize a developmental understanding of such memories. Furthermore, the threat system is especially prone to making associations with emotional memories and it may be possible to assist the processing of such memories and contextualizing them by imagery re-scripting (Holmes, Arntz, & Smucker, 2007) or stimulus discrimination, that is identifying the similarities and differences between an emotional memory being activated compared to a current experience.

Higher order functioning

In addition to our basic mammalian motivational systems (e.g., avoiding harm in threat, contesting resources, and developing status hierarchies in the drive system), humans have evolved cognitive competencies such as anticipating and imagining that allow us to engage in these tasks with more insight, and the ability to be creative and to plan. Not only could humans imagine, plan, anticipate and think systemically, and use symbols and language, they also developed the capacity for objective self-awareness. No other animal can think about itself, its ambitions in life, and its body - including rating whether it is too fat or thin, or rank its reputation against others in the group. This capacity to experience oneself as an object opens the doors to negative evaluation of self and the experience of shame. Thus the experience of a distorted body image in BDD that defines the self is known as “the self as aesthetic object” (Veale, Gournay et al, 1996) and is essentially a trigger for the threat system and

experience of shame, because of the way the self is defined through a perception of ugliness and anticipated rejection or humiliation (Veale, 2002).

Therefore, animals can experience anxiety and even depression but not, one would assume, BDD because it depends upon viewing the "self" as an object and defining identity through appearance. These new cognitive competencies are colloquially referred to as "new brain" and are associated with slow and analytical processing (Gilbert, 2009). However, the "new brain" also means that individuals struggle when they trigger their own threat system by their imagination and worries. The "new brain" is utilised in cognitive therapy, and may be used to question the "old brain" about its "irrationality" in its "thinking errors", such as over-estimation of threat in the old brain, and to motivate the individual to do exposure. "New brain" is also the part that is self-critical ("labelling"); demanding (" 'should' statements"), and anticipating the worst possible outcome ("catastrophizing"). All these strategies further activate the threat system and are clearly unhelpful in the ruminative processes between old brain and new brain – hence the need to focus on the unintended consequences of responding to an internal threat and having an alternative understanding of the problem. However, while the new brain competencies and the ability to experience 'self as object' are central to BDD, the emotional drivers are very much old brain and linked to issues of loss of status inferiority, and vulnerability to rejection or even attack.

Monitoring and responding to threat

The ways of responding to threat can be broadly divided into threat-monitoring and avoidance by the use of safety-seeking or submissive behaviors (see Table 1). The Table lists some of the possible motivations and unintended consequences of the behaviors. Classical way of responding to a threat is with

behavioral inhibition and avoidance. Conditioning theories of anxiety treat compulsions in OCD as active avoidance behavior, maintained by a reduction in anxiety that follows them (or negative reinforcement). Thus some of the repetitive behaviors in BDD may function as a form of avoidance but are designed to keep the individual safe.

(a) Attentional bias in BDD

For threat-monitoring, there is evidence of attentional bias of visual stimuli in BDD – thus there is a bias for detailed rather than holistic processing of visual stimuli (Deckersbach et al, 2000; Feusner et al., 2010; Feusner et al, 2007). Individuals with BDD focus in a mirror on their perceived flaws rather than on the rest of their appearance or on features that may be regarded as positive (Grocholewski, Kliem, & Heinrichs, 2012). Furthermore, a person with BDD will be excessively self-focused, trying to detect and monitor exactly how they look on the basis of their image and whether their appearance is as bad as they think it is. This attentional bias makes perfect sense in detecting threat but has the unintended consequence of increasing awareness of possible defects. In general the more fixed the attentional system on the self, the more the person will obtain information from their "inner" world of threat and not their current experience of what they "see" in the mirror; or what others say or how they act (and be regarded as "delusional").

Thus self-focused attention on an image, repeatedly touching the skin or checking in reflective surfaces may all have the function of threat detection and monitoring. Such ways of responding have the unintended consequence of increasing the preoccupation and distress of BDD. Thus, in order for people with BDD to consciously redirect their attention externally, it is important for them to understand why their mind is self-focused by default and why it can be difficult to refocus their

attention externally because their mind is doing what it is programmed to do for good evolutionary reasons in terms of detection of threat and trying to keep them safe.

(b) Comparing

Over many millions of years the process of competing for social status and rank have given rise to a whole range of evolved mechanisms for monitoring of the self in relation to others by social comparison (Barkow, 1989; Gilbert, Price & Allan, 1995). Humans spend a lot of time monitoring their relative social standing in comparison to others (Boksem, Kostermans, Milivojevic, & De Cremer, 2012; Gilbert, 1992). In BDD, comparing a perceived defect is designed to alert others to threat and indicate defensive actions; this may interact with the drive system. All forms of social communication can be viewed as forms of displays of qualities of the self. Sexual attractiveness, for example, is based upon sexual display. In most species those who have poor displays may fail to reproduce or be wanted as 'mates'. Humans are highly focused on selection according to attraction of friends, employees and lovers. Etcoff (1999) called it "the survival of the prettiest." One of the significant changes over human evolution has been the shift from competition by aggression to competition by displays of attraction - with the desire to be desired. Monitoring one's attractiveness to others has been referred to as social attention holding potential - that is, our ability to monitor and evaluate the kinds of attention we can elicit from others and hold (Gilbert, 1997, 2007). Barkow (1989) has outlined the way social status via attractiveness is highly linked to 'displays' and thus why humans spend so much attention on dress, body make-up and so forth. Tiggemann, Martins, and Churchett (2008) have highlighted how the displays in men are different to those of women. Thus heterosexual men are primarily concerned about body weight, penis size and height compared to women who are more concerned by weight and shape. However in BDD, the preoccupation is primarily focused on the face and there is

evidence that animals and humans seek symmetry, perhaps because it advertises biological quality and serves to attract individuals to partners resistant to developmental disruptions and the absence of infections (Veale, Gournay, et al., 1996). Thus people with BDD may have greater aesthetic sensitivity (Lambrou, Veale, & Wilson, 2011; Veale, Ennis, & Lambrou, 2002).

However, while some people are worried about being average and enhancing their attractiveness, people with BDD are more preoccupied with being ugly and undesirable and not fitting in. The experience of an 'unattractive self' gives rise to the experience of shame (Gilbert, 1998b; Gilbert, 2007; Veale, 2002) and shame can drive the ruminations of self-criticism, self-disgust, and even self-hatred (Gilbert, in press).

Comparing the attractiveness and appearance of one's perceived defect and appearance to others is probably linked into an evolutionary-based monitoring mechanism, which has become overly self-focused. Observing others in a non-judgemental manner without ranking is difficult for a person with BDD but may become easier once he or understands both the function of comparison - to keep a person safe, for example, the unintended consequences of comparing and the way it may lead to ruminating and submissive behavior.

(c) Safety seeking behaviors

The basis of threat in BDD is "I see myself as defective. Others reject people who are defective and diseased – therefore if I create disgust in my mind and the mind of others, and are seen as undesirable, inferior I will be ridiculed, avoided or rejected." Clearly, the emotions associated with being ridiculed avoided or rejected are intense for BDD whereas other individuals might be more able to tolerate the potential for rejection. So the challenge is avoidance of creating these affects in the minds of others and the consequent social outcomes. Individuals with BDD resort to

safety seeking behaviors with a high degree of self-monitoring with specific submissive and concealing behaviors. The term “safety-seeking behaviors” is widely used in the anxiety disorder literature and has a functional meaning. It refers to any action that aims to prevent a catastrophe in a feared situation and reduce harm (Salkovskis, 1991). Safety seeking behaviors therefore include a broad range of responses that overlap with the concept of “submissive behaviors”. Safety-seeking behaviors usually occur in social situations where people with BDD may keep their head down, alter their posture, employ excessive make up or padding, or use their hair to camouflage the perceived defect. Such behaviors are often lumped together as “compulsive” behaviors. However, these behaviors have a function of reducing threat: attempts to camouflage or prevent others from seeing a defect are designed to prevent rejection or humiliation. However, such behaviors also carry unintended consequences. First, this submissive and concealing way of relating is indeed unattractive to others (Gilbert, 2001). Friendships are built from affiliative signaling, open faces and postures and taking an interest in each other. With their avoidance behaviors, people with BDD are doing exactly the opposite. Others may treat them as somewhat unattractive and reject them precisely because of these behaviors, which in turn confirms their negative self-image. Moreover, highly submissive individuals have an understanding that submissive behaviors are unattractive to others, but find it very difficult to override the anxiety that triggers such behaviors. In addition, people with BDD may use considerable mental energy in planning how to camouflage or alter their appearance, and in monitoring whether the behaviour is “working” or how to respond if it stops working. This will further contribute to the degree of preoccupation and distress and does not promote affiliative behavior such as taking an interest in others and express friendly signals.

(d) Ruminating

Ruminating may be a response to a memory of an image in an attempt to verify exactly how one looks or "problem-solve" the wrong problem of trying to solve an appearance problems. To understand the function of the rumination, it is important to identify the motivation. It may be by suppressing emotion of say the sadness that is associated with feelings of loneliness and rejection and replacing it with a focus on body attention that causes difficulty because it has many unintended consequences (Nolen-Hoeksema, 1991) – for example it increases depression, enhances negative thinking, impairs problem solving, and erodes social support (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). In BDD, rumination is likely to increase the preoccupation and distress and avoidant behavior.

(e) Cosmetic procedures

Altering appearance by a cosmetic procedure has some functional similarity to compulsive washing in which a person is trying to "undo" their feeling of contamination. Cosmetic procedures or skin picking holds the prospect of feeling better either by wiping the slate clean or because of a memory of improvement following a previous procedure. Such behaviors may share the function of compulsive washing in OCD, in that the motivation is to purify or eradicate the disgust and start afresh.

Evidence for threat monitoring and avoidance

There is some evidence for the distinction of threat monitoring and avoidance in a new scale that has been validated in people with BDD, the Appearance Anxiety Inventory (AAI) (Veale, Eshkevari, Ellison, Costa, & Werner, 2013). A group with BDD found that the AAI had good internal consistency with Cronbachs α = .86. The AAI was significantly correlated with the BDD-Yale Brown Obsessive Compulsive

Scale (BDD-YBOCS) (Phillips et al., 1997) with a moderate coefficient between the AAI and symptoms of BDD (r = 0.55). There was also a significant moderate correlation with the Patient Health Questionnaire (PHQ-9) (Kroenke & Spitzer, 2002) of 0.58 and with the Generalised Anxiety Disorder assessment (GAD-7) (Spitzer, Kroenke, Williams, & Lowe, 2006) (r = 0.55), showing that higher scores on the AAI are associated with greater symptoms of anxiety and depression. The AAI also shared a moderate negative correlation (r = -0.54) with the quality of life affected by body image (BIQLI) (Cash & Fleming, 2002; Hrabosky et al., 2009). Lastly, it is sensitive to change during treatment. For the purpose of this discussion, it has two factors. One factor on the AAI is threat monitoring and includes the following four items: the checking of appearance in an attempt to verify exactly how one looks; excessive self-focus: the checking of image against that seen in a mirror or reflective surface; and rumination or questioning of others, perhaps in an attempt to verify exactly how one looks and to set up problem solving.

There are six items on the avoidance factor of the AAI. These refer to avoiding cues that might trigger negative evaluation by self or others, trying to camouflage the self or avoiding any reminders of appearance. Understanding the function and context of the behavior (including cognitive processes) and the motivation behind them as one of threat monitoring, avoidance or "undoing" can be clinically helpful in the discussion with a client. Thus, some behaviors (for example trying to follow the contour of the skin over one's nose) may have several functions, such as (a) threat monitoring to verify whether the contour is as bad as it feels, (b) trying to alter the contour and rub the bone down. Thus the aim is for a client to reflect on their behavior, and to carry out their own functional analysis on how their mind is trying to 'find a route to safety and the resolution of fear.' However, these

routes have many unintended consequences particularly if clients follow the theory that the problem is with the appearance of their nose (as opposed to following the alternative theory in therapy that they have a body image problem). The key is to connect the self-monitoring with underlying fears of rejection and aloneness, together, often, with past experiences and aversive memories. Indeed, there is increasing interest in how different types of symptomatology, including voice hearing, can represent unprocessed or overwhelming fears (Gumley, Gillham, Taylor & Schwannauer, 2013)

The process of comparing a feature on the AAI is partly a complex factor as it loads on both the factor of avoidance and to a lesser extent that of threat monitoring. This makes sense as comparing may consist of (a) threat monitoring – here the person with BDD ranks himself against others, and, having established that he is ranked lower than another person (b) enacting submissive behavior and social avoidance. This may also be expressed in meta-cognitive beliefs regarding the motivation behind the cognitive process and behavior.

All these ways of responding make perfect sense when they are discussed in terms of trying to keep a person safe. We suggest that the reason why it may be difficult for a client to engage in therapy is they do not have a good understanding of the function and evolutionary context in which their behavior occurs; with memories of past aversive experiences not yet emotionally processed or appropriately appraised, they persist as a current threat.

Clinical implications

We therefore predict that using new brain and "cognitive restructuring" is helpful when there is cognitive flexibility and lower levels of threat and arousal. However one might also reach a stage in therapy with the client saying, "I can see the

logic but I don't feel any better" or "I know (logically) that I am not ugly but I still *feel* ugly". This is a recognised difficulty in CBT for a range of emotional disorders (Stott, 2007). Cognitive restructuring of the content of beliefs will be less effective when the sense of threat is marked or is associated with aversive memories that make the person feel as if the experience is still occurring as in Post-Traumatic Stress Disorder. Therefore, the desire to avoid and take action to escape from a potential threat is normal and adaptive. This in turn leads to the "new brain" ruminating in an effort to solve the "appearance problem" rather than the underlying social fear. This inevitably leads to further preoccupation, frustration and distress. Equally being self-critical or catastrophizing is regarded as helpful in self-improvement or preventing threat and giving it up as dangerous. The problem of cognitive restructuring in BDD is therefore that it is rarely believable and that clients do not want to give up strategies that are designed to keep them safe at least until they have a better understanding of the problem and develop a different perspective of their body image. Furthermore, just focusing on the irrationality of BDD or the unimportance of appearance could potentially increase preoccupation similar to questioning the content of an obsession in OCD and increase the sense of shame flowing from the inability to get over the problem. Moreover, the *inner emotional* tone for this rumination is threat-based (e.g, "Why did you get that surgery done by that surgeon, you stupid idiot?"), not curious or supportive. It may reduce therapeutic alliance as the therapist is viewed as not understanding. Equally conducting surveys and collecting data to *disprove* the content of the beliefs may be unhelpful.

We believe there is greater benefit to identifying the motivation and unintended consequences behind processes such as ruminating and self-focused attention. It is possible to identify processes such as "labelling" or being self-critical

but only if it encourages self-reflection and the ability to distance oneself from such thoughts. Thus it is important to have a credible alternative understanding of the problem to be tested out in therapy so that the person can begin to reflect on the nature of his or her self without a deep sense of shame.

Compassionate Focused Therapy (CFT

CFT began very simply. Gilbert (2000, 2009) noted that many depressed people could generate 'alternative' thoughts but this did not always help them, partly because of the emotional textures of those thoughts. For example, an individual might have the thought of "When laying in bed I tend to ruminate which makes me feel worse. If I get up and do things, even make a cup of tea, I will get myself going and will feel better." However, Gilbert (2000) noted the emotional tone was commonly, "You know, just laying here ruminating makes you feel worse, it's your own stupid fault, get out of bed you lazy toad and make a cup of tea." So the first CFT intervention was simply to practice creating a warm voice, as if talking to a friend, and really try to *feel* the impact of that kind voice. It turned out that many depressed patients struggled to do this or were resistant; or that 'feelings of kindness' started a grief process (Gilbert & Irons, 2005). Over subsequent years, CFT built on other aspects of compassion such as the capacity for empathy for distress, distress tolerance, and creation of genuine compassionate motivation to work with distress. Generating alternative thoughts and most behavioural practices had to meet the compassion test 'where the intervention (e.g., alternative thoughts) are *experienced* as helpful, kind, supportive and validating.' One of the reasons this may be difficult for some people is because their affect system, which underpins the experience of kindness and compassion, is not easily accessible or is associated with trauma memories. Consequently, many people with BDD may not have access to one of the most

important regulators of threat - affiliate emotion. As we have noted, they are preoccupied by shame and rejection rather than the ability to create support, kindness and understanding in themselves and others.

CFT is integrated with traditional approaches to, and recent research on, compassion. So today compassion is commonly defined as "a sensitivity to the suffering of the self and others with a deep commitment to try to alleviate and to prevent it" (Gilbert & Choden, 2013). This simple definition speaks to two very different psychologies: 1) The ability to engage with suffering and difficulty (which depends upon motivation, attention, capacities to be emotionally attuned with, but also to tolerate, distress, and to mentalize and have empathic understanding of the causes of your suffering in an non-judgemental way) and 2. developing the insights and wisdom to try to prevent and alleviate suffering (Gilbert, 2009; Gilbert & Choden, 2013). The second psychology is action focused. For example, if one wants to be a doctor then the motivation to attend to suffering, and be able to tolerate and make sense of it is important but insufficient. One also has to train for some years to understand the nature of suffering and to develop the skills of healing and intervention. Central to CFT is recognizing that developing access to affiliative processing helps in a whole range of compassion therapy tasks such as developing distress tolerance, empathic insight and the courage to work with memories that are frightening. Moreover, learning to approach these difficulties with a kind, validating and empathic inner orientation makes the task a lot easier than it would be with a hostile, constantly critical or threat focused voice.

One of the key compassion interventions is psycho-education that highlights the way in which the evolved human brain is often tricky and easily creates loops around evolutionary fears. The focus here is that "much of what goes on in our minds

is not of our design nor of our choosing and is not our fault" For some people this de-shaming and de-personalising process can be a very moving experience because self blame and feelings of there being "something wrong with me" can lie the heart of these difficulties. Crucially however it is our responsibility to change. So CFT makes a big distinction between blaming and shaming and the processes by which we develop the courage to take responsibility for change and then engage the change processes - all the time keeping an eye on the affiliative experience during the process of change.

So a key message to someone with BDD is that the way their brain has been shaped is an evolutionary problem of being human and internal threats, and that BDD symptoms are designed to keep them safe from perceived social exclusion or rejection. This offers a different rationale for therapy. One may help the person realize how old and new brain create loops and how becoming more mindful of those loops and taking the compassionate but also rational evidence-based stance can help one breakout of those loops. The focus in this approach is on communicating empathically that people are not to blame for their BDD and making sure the client has a good developmental understanding of the problem. This is why one does not use the language of cognitive distortions, dysfunctional beliefs or maladaptive schemas because shame-prone clients may process this as "it's my fault because I'm thinking wrongly." Thus a therapist might say: "It is very understandable that after you were teased and bullied as a teenager, you felt different from your peers. You told me that you felt alone and rejected and that the onset of the "felt impression" of how you look began at around this time." From here it is possible to engage in the guided discovery process, for example, "How might there be an emotional link between the image you have of your features and some of those difficult early memories"? "Is it possible that

those fears of rejection and that sense of loneliness and emptiness were drivers for this focus on your appearance? I wonder what would happen if we could help you with the difficult memories that are still painful to you, and the feelings of rejection, aloneness and shame that haunt you? ".

In CFT a person with BDD has responsibility for change, learning how to empathically understand the roots of the difficulties, tolerate distress and test out an alternative explanation: that they have a body image problem with memories that need updating rather than an appearance problem. Compassion allows them to shift attention to, and begin to tolerate, the deeper underlying fears of unlovability, the feelings of undesirability and the self as rejectable (e.g, because of creating disgust in oneself and in the minds of others) and sense of separation/difference and aloneness. In CFT it is important to work with these feelings of aloneness and separateness because they are symptomatic of a very dysfunctional affiliative system. These insights point to the kind of social environment and therapeutic relationship that needs to be created for a person with BDD who finds feeling safe difficult. It means not just appealing to the rational "new brain" to do exposure. It harnesses the new brain for a behavioral experiment to test out an alternative understanding of the problem and to reduce self-focused attention (which is the source of the threat). This also means trying to prevent unnecessary activation of the threat system by one's inner critic and the use of mindfulness and compassionate imagery practices to try to stimulate the compassionate pathways and to feel safe.

Compassionate Mind Research

There is increasing interest in, and evidence for, helping people to develop compassion for themselves and others as a way to significantly alleviate a range of mental health problems (Germer & Siegel, 2012; Hoffmann, Grossman, & Hinton

2011). Indeed compassion practices have been shown to have a range of physiological effects on frontal cortex and immune systems, for example (Lutz, Brefczynski-Lewis, Johnstone, & Davidson, 2008; Klimecki, Leiberg, Lamm, & Singer, 2012; Rein, Atkinson, & McCraty, 1995). A number of slightly different compassion trainings and practices for the general population have been shown to be highly effective in increasing well-being (Neff & Germer, 2012; Jazaieri, Jinpa, McGonigal et al; 2012). CFT however was designed for clinical populations with high shame and self criticism. Recent evidence suggests that CFT reduces depression and anxiety in people presenting to community mental health teams (Judge, Cleghorn, McEwan, & Gilbert, 2012). Laithwaite, O'Hanlon, Collins, Doyle, Abraham, Porter & Gumley, (2009*)* found that CFT significantly reduced depression, anxiety, shame, and self-criticism in patients in high security psychiatric settings. CFT has been found to significantly reduce anxiety, depression, shame and self-criticism for people with chronic personality disorders (Gilbert & Procter, 2006; Lucre & Corten, 2012) and eating disorders (Gale, Gilbert, Read, & Goss, 2012). CFT has been shown to be helpful for people with psychosis (Mayhew & Gilbert, 2007; Braehler, Gumley, Harper et al., 2013; Braehler Harper and Gilbert 2013) and can significantly reduce paranoid ideation in a non-clinical population (Lincoln, Hohenhaus, Hartmann, (2012). Ashworth, Gracey, & Gilbert (2011) found CFT to be valuable addition to standard therapies for people with acquired brain injury. Kuyken, et al., (2010) found that increasing self-compassion was a significant mediator between a mindfulness intervention and recovery in depression. Schanche, Stiles, McCullough, Svartberg, and Nielsen (2011) found that self-compassion was an important mediator of reduction in negative emotions associated with cluster C personality disorders and recommended self-compassion as a target for therapeutic intervention.

The evidence base is of course still to be developed, particularly with well-controlled trials, but there is sufficient data now to recommend integrating compassion approaches into Cognitive Behaviour Therapy (CBT) for BDD.

Conclusions

We suggest that CBT for BDD can be improved by 1) developing a functional analysis of the functions and contexts of behavior in BDD, 2) linking the fears that are focused on the body to more underlying fears associated with rejection, separation, isolation and loneliness, 3) linking these, where appropriate, to emotional memories and working with re-scripting, 4) providing an evolutionary context that de-shames and de-personalises the process of the BDD and highlights how attention mechanisms can get trapped in particular threat monitoring systems; in addition, providing information about how disease and deformity monitoring mechanisms can operate and get locked in, 5) addressing shame and self-criticism directly, 6) ensuring that during the process of therapy clients have access to, and learn to cultivate, the affiliative emotion processing system for self-to-self and self-to-other. Without access to the affiliative emotion systems clients may struggle to be able to counteract the underlying fears of separation, difference and rejection, and it will be more difficult for them to develop the courage to engage in some of the exposure work, 7) developing many of the competencies for compassionate relating in terms of empathic understanding, mindfulness and distress tolerance, and courageous behavior.

This approach to BDD seeks to root its understanding and practice in what we currently know about how the brain evolved, the role of specialist attention monitoring systems, the central dimension of attractiveness to human social relating, and how the evolution of affiliative emotion is a major regulator of threat. Building these insights into current therapies may offer new ways for helping people with

BDD.

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Table 1 *Examples of motivations, and unintended consequences of safety-seeking and submissive behaviours*

FUNCTION	**RESPONSE**	**POSSIBLE MOTIVATION**	**POSSIBLE UNINTENDED CONSEQUENCE**
Threat detection and monitoring	Checking feature in mirror or reflective surface	To determine if the feature is as bad as it feels it is or To know exactly how one looks	Increasing preoccupation, distress and handicap and feel more different Increases uncertainty
	Touching feature with fingers	To determine if the feature is as bad as it feels it is or To know exactly how one looks	Increases awareness of flaws, increases/maintains attention bias toward bodily sensations. Fuels magnification of flaw in self-generated image.
	Taking photos of self for checking, examining, comparing, or monitoring change.	To determine if the feature is as bad as it feels it is or To know exactly how one looks	Increases awareness of flaws, increases/maintains attention bias, feel more different
	Ruminating about past events e.g. bullying or teasing	To assess chance of future humiliation	Fuels preoccupation lowers mood. Increases vigilance in social situation.
	Ruminating reasons for my appearance	To make sense of the problem To solve the appearance problem	Fuels preoccupation and lowers mood.
	Self-focussed attention	To prevent one self	Increasing preoccupation,

	on felt impression of feature	from becoming complacent	distress and handicap and feel more different
	Measuring a feature	To find 'objective' measure of severity or change in flaw.	Increases awareness of flaws, increases/maintains attention bias toward bodily sensations. Fuels magnification of flaw in self-generated image.
	Discuss feature or seek reassurance about whether flaw is visible or has got worse	To gather evidence/support to validate undertaking a cosmetic procedure.	Increases sense of hopelessness and helplessness if unable to obtain procedure. Feel more different
	Compare feature against old photos	To measure change in flaw	Increasing preoccupation, distress and handicap Increases uncertainty and feel more separate
	Scrutinise against media pictures or compare against others I meet	To determine where one stands in relation to others	Increasing preoccupation, distress and handicap Increases uncertainty. Increases self-consciousness and dissatisfaction and feel more separate
Avoidance of threat	Excessive make up or sunbeds to camouflage perceived defect	To reduce threat of humiliation by hiding flaws	Time consuming, cause conflict in relationships, feel more alone
	Comparing feature to others	To determine where one stands in relation to others	Increases sense of discrepancy between current appearance and 'ideal', fuelling dissatisfaction and feel more separate
	Mental planning how to camouflage feature	To bring relief that threat can be reduced	Increasing preoccupation
	Use objects/ posture/ clothing/ hair to prevent people seeing feature	To reduce threat of humiliation by hiding flaws	Increases self-consciousness and vigilance, feel more separate
	Grooming to camouflage	To reduce threat of humiliation by hiding flaws	Requires maintenance, increasing self-consciousness and preoccupation
	Looking at feature in mirror	To prevent self from forgetting how one looks and being caught 'off guard'	Increasing preoccupation, self-consciousness, distress and handicap
	Looking at photograph or video of self	To prevent self from forgetting how one looks and being caught 'off guard'	Increasing preoccupation, self-consciousness, distress and handicap, feeling more separate
	Ruminating about the problem		
	Avoid situations or activities where feature may be seen	To reduce threat of humiliation or rejection	Reduce variety of activities, increased social isolation
	Cosmetic & dermatological treatments	To reduce threat by eliminating flaw	Dissatisfaction with result, increased shame if feels has made things

			worse
Undoing the threat	Mental cosmetic surgery in front of mirror	To increase of sense of hope that threat can be improved	Increases sense of discrepancy between current appearance and 'ideal'
	Mental planning for cosmetic treatment	To increase of sense of hope that appearance can be improved	Increases sense of discrepancy between current appearance and 'ideal'
	Skin-picking	Reduce chance of rejection by removing blemishes or 'disgusting	Can lead to increased redness and fear that flaw will be more noticeable and feel more separate
	Excessive grooming or adjusting hair until feels "just right|"	Aim to reduce self-consciousness and improve social performance	Time consuming, cause conflict in relationships, reduced engagement in other activities and feel more separate
	Dieting, laxatives, diuretics, diet restriction, excessive exercise	Reduce chance of rejection or humiliation by removing or reducing flaw or compensating with other areas of body	Fatigue, poor health, reduced engagement in relationships or activities, feel more alone
	Changing clothing	Reduce chance of rejection or humiliation by reducing visibility of flaw or drawing observers eye	Time consuming, fuels preoccupation and dissatisfaction
	Discuss feature or seek reassurance about whether flaw is visible or has got worse	To gather evidence/support to validate undertaking a cosmetic procedure.	Increases sense of hopelessness and helplessness if unable to obtain procedure; feel more separate

Highlights

- The function and context of the repetitive behavior in BDD is described
- Attentional bias and checking is described in terms of threat detection
- Comparing and camouflaging is described in terms of avoidance of threat
- The use of a compassionate mind has potential for regulating the threat system in BDD

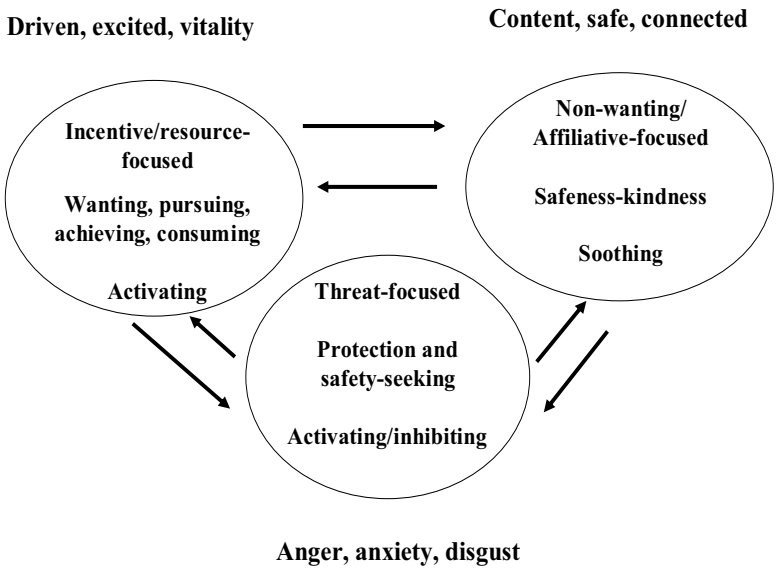

Figure 1 *Three Types of Affect Regulation System; Gilbert, (2009) reprinted with permission from Constable & Robinson.*